REMARKS

Claims 1, 32, 35, 36, 50, 56, 61, 64, 65, 66 and 69 have been amended. Claims 2, 4-5, 11, 14-31 and 34 have been canceled without prejudice. Claims 1, 3, 6-10, 12, 13, 32, 33 and 35-73 remain before the Examiner for reconsideration.

In the Office Action dated March 26, 2004, the Examiner rejected claims 1-3, 6-10, 12, 13, 32, 33 and 35-37 under 35 U.S.C. 102(e) "as being anticipated by Aasmul et al. (USPN 6,533,183)." Specifically, the Examiner assured that:

> Aasmul et al. discloses a length of material that can be used on syringes that consists of indicators that represent a code when a light beam (electromagnetic energy) is transmitted and reflected from the length of material (notches and grooves) therefore, providing information about the syringe. (Figures 1,2,3,4,5 and Paragraph [0002], [0003], [0011], [0041], and entire reference).

In response to the Applicants' argument set forth in the Amendment filed January 12, 2004, the Examiner asserted that:

> With regards to Aasmul, the applicant argues that there is no teaching of propagating light through the cartridge and wherein the light that enters the cartridge is detectable. The examiner disagrees with the applicant's interpretation of the claims and the prior art. The claims reads that the length of material is "adapted" to "substantially" propagate light therethrough in a direction "substantially" parallel to the longitudinal syringe axis and therefore reading the claims as broadly as possible the examiner interprets Aasmul reading on the claimed invention. Aasmul has all the structural limitations to perform the functions claimed in the application. Aasmul has the sloped indicators on the outer wall of the cartridge wall wherein the bars are mainly transparent therefore allowing light to be refracted when light passes through the bars, which could be detected. Since the applicant uses 'adapted' and 'substantially,' this broadens the claims, as well as relies on functional language to overcome the prior art, as opposed to structural limitations, especially when this is a device claim.
>
> The examiner understands that the prior art is different that then invention, but the applicant fails to claim the invention in the right scope to overcome

> the prior art. A suggestion would be to include the sensor system in the claim.

Applicants respectfully traverse the Examiner's rejection.

Initially, Applicants note that in using the phrase "adapted to," the applicants are doing no more than setting forth structural limitations with the use of "functional" language. It is well established that there is no basis for the proposition that "'functional' language, in and or itself, renders a claim improper." In re Swinehart, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). As set forth by the Court of Customs and Patent Appeals:

> We take the characterization 'functional' ... to indicate nothing more than the fact that an attempt is being made to define something ... by what it ***does*** rather than by what it ***is*** (as evidenced by specific structure or material, for example). In our view, there is nothing intrinsically wrong with the use of such a technique in drafting claims. Indeed we have even recognized in the past the practical ***necessity*** for the use of functional language. See, for example, In re Halleck, 421 F.2d 911, 57 CCPA 954 (1970).

In re Swinehart, F.2d at 212-213 (emphasis in original).

Moreover, the use of the phrase "adapted to" to set forth structure has been specifically recognized as proper by the Federal Circuit, and it is improper to disregard limitations that include the phrase "adapted to." See, for example, Pac-Tec v. Amerace Corp., 903 F.2d 796, 901, 14 USPQ2d 1871, 1876 (Fed. Cir. 1990) (holding that it is improper to disregard limitations that include "adapted to", "whereby" and "thereby" in determining anticipation).

For the above and other reasons, Applicants believe that the claims as previously presented are patentable over Aasmul et al. Nonetheless, in the interest of expedient prosecution of several embodiments of the present invention, Applicants have amended the claims to more clearly set forth such embodiments. Applicants reserve the right reassert the claims as presented prior to this Amendment and Response.

As admitted by the Examiner, Aasmul et al. is different than the present invention. In that regard, Aasmul et al. discloses a cartridge (1) for an injection device which includes thereon a code represented by a number of bars (2, 3, 4, 5) that are oriented

perpendicular to the longitudinal axis of the cartridge. The bars (2, 3, 4, 5) are transparent and are provided with an optical grating which diffracts and reflects light impinging on the surface from a direction normal or perpendicular to the surface. Col. 5, lines 27-33. The bars of Aasmul define a code so that a portion of the light is reflected from the surface of the bar to be detected for the indication of the presence of the bar when the bar passes a reading light field. The reflections from the bars can be interpreted as representing "1"s and "0"s in a binary code. Aasmul et al. thus discloses what is essentially an optical scanning technique in which the "bar code" (which, during use, is moved by a light field and sensor assembly) is not added to the cartridge of Aasmul et al. via a label, but is formed on the cartridge using bands or areas of optical grating.

Aasmul et al. does not disclose or suggest a syringe having a length of material (for example, a syringe wall) including a plurality of indicators along the length of material at different predetermined longitudinal positions thereon, wherein each of the indicators is adapted to interact concurrently in a manner that is detectible and with at least a portion of electromagnetic energy being propagated through the length of material in a direction substantially parallel to the axis of the syringe.

In the present invention, electromagnetic energy (for example light) is propagated through the length of material (or syringe wall) to interact concurrently or generally simultaneously with the indicators in a manner that is detectable. As used herein, the term concurrently indicates that, after the electromagnetic energy (e.g., light) has been propogated through the material, each of the indicators interacts with a portion of the light at the same time, as opposed to instantaneously. In that regard, electromagnetic energy (for example, light) has a finite speed and does not reach each of the longitudinally spaced indicators instantaneously or in the same instant. However, once the energy has propagated through the length of materials and while it is continuing to be propagated, each of the indicators interacts concurrently with energy being propagated in a detectable manner.

In Aasmul et al., light is directed to impinge upon the areas of optical grating of the cartridges from outside of the cartridge in a direction generally orthogonal to the

orientation of the axis of the cartridge. See, for example, Figures 1 through 5 of Aasmul et al. and Col. 5, lines 27-33. Most of the light transmits through the generally translucent optical gratings of Aasmul in a direction generally orthogonal to the axis thereof and some is reflected. Moreover, the optical grating code of Aasmul et al. is moved relative to the light field impinging upon the code in a direction generally normal to the axis of the cartridge of Aasmul et al. so that each of the optical gratings interacts with the beam of light at a different time, that is sequentially.

There is no disclosure or suggestion in Aasmul et al. of propagating light or other electromagnetic energy through the length of the cartridge of Aasmul et al. (that is, substantially in the direction of the longitudinal axis thereof) to interact with a plurality of indicators at the same time. Indeed, even if, for example, light could be propagated longitudinally through the cartridges of Aasmul (for which there is no disclosure in Aasmul), the optical gratings of Aasmul are not suitable to interact concurrently or generally simultaneously with such (internally) propagated light to create a detectable signal. For example, even if the first band of optical grating (see, for example, Figure 1 of Aasmul et al.) interacted with light being propagated longitudinally through the wall of that cartridge, it is unlikely that there would be sufficient light energy propagated longitudinally through the cartridge of Aasmul et al. near the surface of such cartridge to create a detectable interaction with optical grating bands further down the axis of the cartridge. Moreover, each subsequent optical grating band of Aasmul et al. would further decrease the light available to the next optical grating band.

In several embodiments of the present invention, each of the indicators includes an angled surface adapted to interact in a detectible manner with at least a portion of the energy being propagated through the length of material including the indicators in a direction substantially parallel to the syringe axis. Each of the angled surfaces can, for example, be positioned at a different depth within the length of material to, for example, reduce interference between the indicators and to help ensure that sufficient energy (being propagated substantially parallel to the syringe axis) is transmitted to each of the indicators so that each of the indicators interacts with the energy in a detectible manner.

Aasmul et al. does not disclose or suggest indicators including such angled surfaces positioned at different depths within a length of material.

Although the Examiner is correct that use of the term "substantially" in connection with energy propagated "substantially parallel to the longitudinal syringe axis" broadens the claims in the sense that the claims are clearly not limited to the case wherein the energy is propagated strictly or absolutely parallel to the longitudinal axis of the syringe, the use of the phrase "substantially parallel" does not broaden the claims to the extent that such claims are anticipated by Aasmul et al.

For at least the above reasons, Applicants submit that the Aasmul et al. patent does not disclose each and every element or limitation of claims 1-3, 6-10, 12, 13, 32, 33 and 35-37. Consequently, Applicants submit that the Aasmul et al. patent does not anticipate claims 1-3, 6-10, 12, 13, 32, 33 and 35-37, and that the rejection based thereon should be withdrawn.[1]

The Examiner also rejected claims 1-3, 6-10, 12, 13, 32, 33 and 35-73 "under 35 U.S.C. 103(a) as being unpatentable over Hitchins et al. (USPN 5,944,694) and further in view of Aasmul et al. as applied to claims 1-3, 6-10, 12, 13, 32, 33 and 35-37 above [in the Section 102(e) rejection]." Specifically, the Examiner asserted that:

> Hitchins et al. disclosed syringe for use with powered injector to inject fluid into a patient comprising a syringe with a plurality of indicators along a length of material of the syringe wall, wherein the syringe comprises a body, a plunger, a mounting flange, a drip flange, but fails to disclose the workings of an optical sensing system that reflects and refracts the light beams to form the code that provides information about the syringe.
>
> Aasmul et al. discloses a length of material that refracts and reflects light to provide information about the syringe.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Hitchins et al. with Aasmul et al., because Aasmul et al.

[1] Once again, Applicants reserve the right to swear behind the effective filing date of the Aasmul et al. patent, if such becomes necessary or expeditious at a later date during the prosecution of this patent

teaches that adding a length of material comprising notches and grooves, wherein the length of material allows light to be reflected and refracted; provides for a more accurate way of coding information on medical devices regardless of what the information might be (Aasmul Column 1, line 55 - Column 2, line 14). It is also well known in the art to use optical coding with regards to refraction and optical sensors to code information. (See USPN 5,461,239).

For the reasons set forth in the previously filed Amendment, Applicants respectfully traverse the Examiner's rejection. Hitchins et al. does not overcome the deficiencies of Aasmul et al. set forth above. Consequently, Applicants submit that a combination of the Hitchins et al. and Aasmul et al. patents does not render obvious the present invention as set forth in claims 1-3, 6-10, 12, 13, 32, 33 and 35-49.

In view of the above amendments and remarks, Applicants respectfully request that the Examiner withdraw the rejections of the claims, indicate the allowability of the claims and arrange for an official Notice of Allowance to be issued in due course.

Respectfully submitted,

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application. By setting forth the distinctions between Aasmul et al. and the present invention in argument, Applicants do not admit that Aasmul et al is available as prior art against the present invention.